SWEN303

Assignment 2: Design

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Part 1: Introduction

Business Objectives

The COVID-19 Tracer App has no commercial purpose. Instead, it was developed by the Ministry of Health (MOH) to allow users to record their activity for the ease of contact tracing.

The main functionality of the app is its QR code reader. QR codes are placed on the windows of every commercial retail store and public transport, and using the app to scan these QR codes creates a data entry in the app's built-in digital diary. The data stored in said diary is not shared with anyone unless requested by a contact tracer (usually via code). However, this will only occur if the user becomes a probable case of COVID-19 in their community.

The app also includes the option of manually logging a data entry into the diary. If a user is unable to use the QR code reader for whatever reason, they can list the place or activity, and the arrival time at said place or activity. As mentioned earlier, the data entered into the diary is not shared with anyone else unless upon request by a contact tracer.

The COVID-19 Tracer App utilizes Bluetooth to enable what is known as Bluetooth tracing. If enabled, your smartphone exchanges random anonymous keys with other nearby smartphones with the feature enabled. If you or another app user in your community tests positive for COVID-19, a Bluetooth alert will be sent out to other app users who have been in close contact. This does not replace the need for QR code reading or manual diary entries; rather it is a way to maintain safety in communities without compromising users' privacy.

If a user becomes a close contact of a probable or confirmed case of COVID-19, they are contacted by a contact tracer and will be requested to share their digital diary with the contact tracer. To maintain privacy, however, the contact tracer sends the user a verification code to ensure the user is genuine and not a hacker. Once the code is

inputted, the data stored in the app's digital diary is shared with the contact tracer. Only data within 60 days of the present day is stored in the digital diary.

While most modern smartphones have built-in QR code readers, and while Android and iOS have their respective apps that allow for digital diary entries, an app such as the COVID-19 Tracer App has never existed, or at least gone mainstream, until the COVID-19 pandemic raised the question on how to improve the process of contact tracing.

Importance to Stakeholders

The app is essential for all of New Zealand in fighting off COVID-19; it provides the first line of defense for the NZ Government and communities nationwide. Having an app such as this will benefit contact tracers significantly. Encouraging the five million people of New Zealand to use this app will help improve the process of contact tracing, allowing the best course of action to be determined much sooner and potential outbreaks to be contained much faster.

The users are the direct beneficiaries of this app. By recording their activity during the day, they are keeping themselves and the people around them safe from COVID-19. The app provides a number of opportunities for users in how they log their activity. Users can scan QR codes and allow the process to be automated, or if this is not possible, manually enter a diary entry. Users also have the option to enable Bluetooth tracing, which will alert users if they have been in close contact with a probable or confirmed case of COVID-19. And while this is a rare scenario for most people, users have the ability to share their digital diary with a contact tracer if ever approached by them.

Part 2: Personas and Requirements

Model Overview

The use case diagram was created using diagrams.net. This is an **updated version** of the original use case diagram seen in Assignment 1.

Personas

NOTE: I have made no changes to my personas or use cases.

Tanjiro Kamado

Tanjiro is a 23 year old UX Designer at Air New Zealand. He graduated from Victoria University of Wellington in 2019, and found a job at the airline soon after. Tanjiro likes to keep a diary of his daily activities; he normally uses the Notes app on his iPhone to do this. However, he has decided to use the COVID-19 Tracer App to speed up the process due to the convenience of QR code scanning. Tanjiro's goal with the app is simple; to track where he has been using the app's QR code reader in order to keep himself and others safe from a potential outbreak.

Activities: Tanjiro spends most of his time working on UX projects at Air New Zealand, including the airline's official app or their inflight-entertainment user interface. He spends his down time going to the gym or playing badminton.

Attitudes: Tanjiro is a kind-hearted person; he is very considerate of others and is aware of how his actions will affect the people around him.

Aptitudes: Tanjiro is intelligent and disciplined; he knows when to get work done and when he can rest by organizing his week in advance.

Weakness: He's very obsessed with health and safety, often nagging his family about their personal hygiene and their driving conduct.

Priorities: Tanjiro wants to ensure the safety of himself and his family. In addition, he wants to contribute to the wider New Zealand community in fighting off COVID-19, going along with the advice of the New Zealand government and using the app diligently.

Interaction: Tanjiro will interact with the COVID-19 Tracer App whenever he is about to enter a store or use public transport; this could potentially occur multiple times a day.

Eren Jaeger
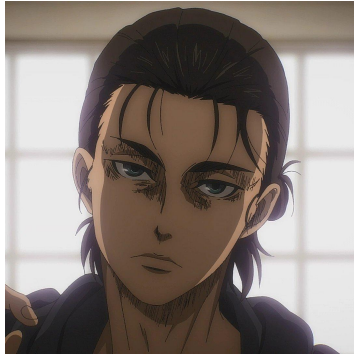
Eren is a 19 year old first-year domestic student, living with his parents in Titahi Bay and studies Media Design at Victoria University of Wellington. Eren also works part-time at Burger King Porirua as a team member, helping out with the operations of the restaurant. Due to the advice of the government, and his parents, Eren wants to start using the COVID-19 Tracer App to appease them. He'll be using the app for the same reason of contact tracing in order to protect himself and his family, although in his mind he just wants his parents to stop nagging him about using the app.

Activities: Eren spends most of his time studying at university, often sitting down in the library and working on his assignments. He spends his down time watching Netflix and working on his 1986 Toyota AE86 Sprinter Trueno.

Attitudes: Eren appears to be cold-hearted and intimidating; although in reality he cares deeply about the people around him. He also doesn't tend to show much emotion about anything.

Aptitudes: Eren is a very creative person, often solving problems in ways only he would know and understand.

Weakness: He can be selfish from time to time, often putting himself above others in certain situations.

Priorities: Eren will use the COVID-19 Tracer App because his parents told him to do so.

Interaction: Eren will only use the COVID-19 Tracer App whenever he feels like it.

Use Cases

Scanning QR Code *Requires* QR Code Reader

User	System
Open app	
	Go to 'Record visit' page and enable: **Camera**
Point camera at QR code	
	Camera's built-in QR code reader successfully reads the QR code
	App records place and activity
	App records place and time
	Proceed to confirmation page
Add details	
	App records details
Tap 'Finish'	
	Data entry is added to diary
	Visit recorded

Manual Diary Entry

User	System
Open app	
	Go to 'Record visit' page and enable: **Camera**
Tap 'Add manual entry'	
	Go to 'Add manual entry' page
Type place or activity	
	App records place or activity
Enter date and time	
	App records date and time
Add details	
	App records additional details
Add entry to diary	
	Data entry is added to diary
	Proceed to confirmation page
	Show details
Tap 'Finish'	
	Visit recorded

Enable Bluetooth Tracing

User	System
Open app	
	Go to 'Record visit' page and enable: **Camera**
Tap 'dashboard'	
	Go to 'Dashboard' page
Tap 'Bluetooth tracing is off'	
	Go to 'Bluetooth tracing' page
Tap 'turn it on'	
	Bluetooth tracing is enabled

View An Entry In The Diary

User	System
Open app	
	Go to 'Record visit' page and enable: **Camera**
Tap diary icon	
	Go to diary page
Tap diary entry	
	Go to diary entry page
	Diary entry data is revealed

Part 3: Design

Storyboard

The storyboard was created using Miro: [COVID Tracer App Storyboard](#)
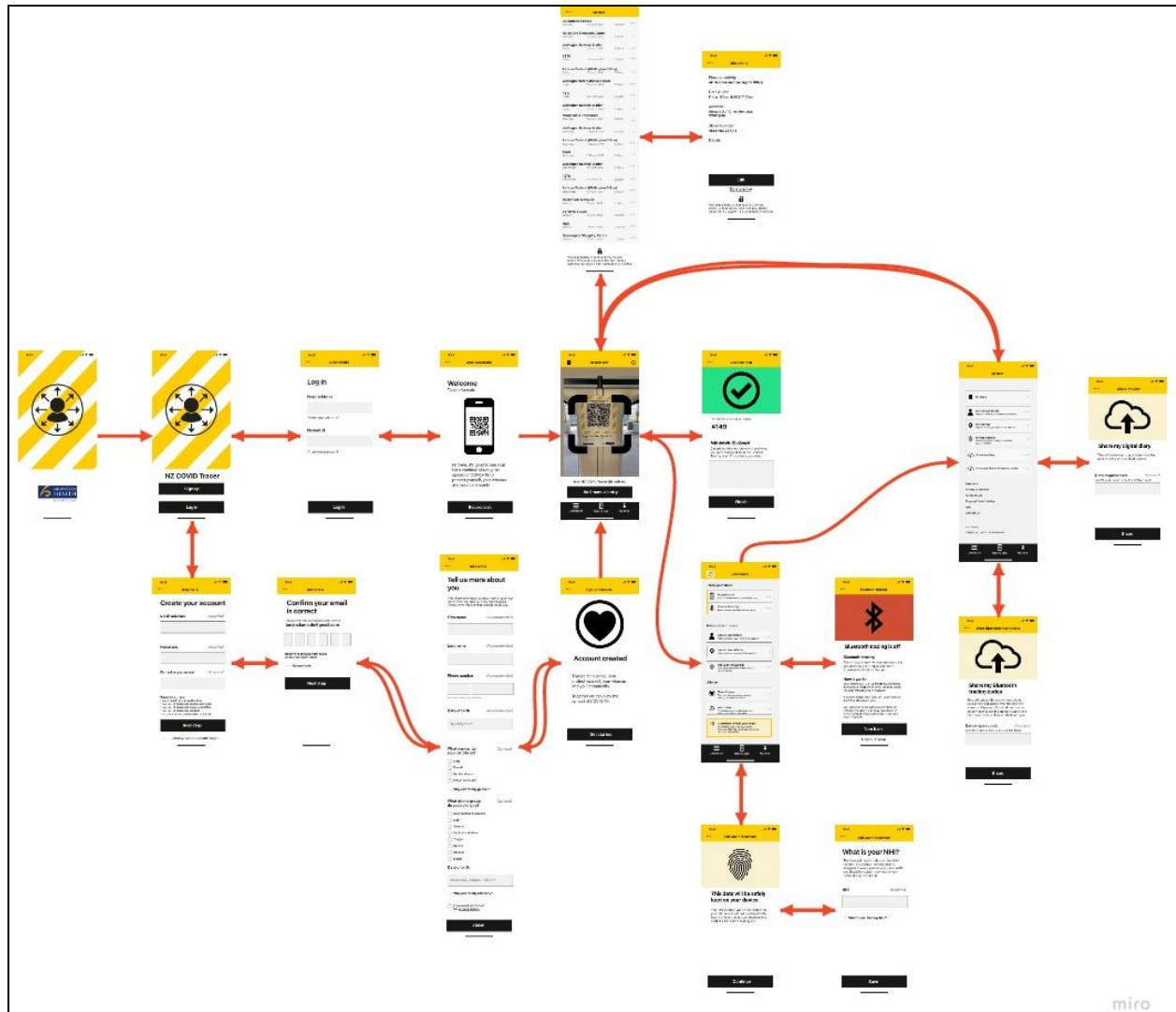
The diagram above shows the functionality of the app and how to transition between the pages. I should point out that I have not implemented all of the app's functionalities, as that would result in a diagram that would be hard to follow because of the millions of pages and arrows left, right and centre. I have also not designed all of the app's pages for the same reason, and partly because of the fact that some of the functions lead to external pages on a web browser. So for simplification, I've only included the relevant functionalities of the app.

A lot of the app includes the opportunity to proceed to a previous page. For example, when going from the 'Record visit page' to a diary entry, they have the opportunity to do the same transition but in reverse order. Of course, I did this to give the user a choice, and I felt that it was important to highlight this feature that the app exhibits throughout the diagram.

The home page gives the user two options; either log in or register a new account (for new users). Once the user has completed doing either choice, they are led on to the 'Record visit' page, which will be the most accessed page because it is after all, the overall point of the app. That is part of the reason why it is located in the centre of the diagram; to highlight its importance on the app. From that page, the user can either record a visit (using either the QR code reader or manual diary entry), access their digital diary, go to the 'Dashboard' page or go to the 'My data' page.

The 'Dashboard' page allows the user to either add their NHI number or enable the app's Bluetooth tracing feature. While in reality it is capable of doing more, the other functionalities lead the user to an external browser. So for now it is simplified to just have those functionalities.

The 'My data' page allows the user to access their digital diary or share either their Bluetooth codes, their digital diary or both. I should point out that the sharing of data only ever happens when it is requested by a Contact Tracer, which is a very rare scenario. However, I felt it was important to highlight this since it correlates back to the overall purpose of the app.

The 'Digital diary' contains a list of visits recorded by the user. The user can access each entry and have a look at the details of that entry. The user can also edit or delete entries but I haven't highlighted it since I believe that in most cases, users will record their activity and nothing more.

Coverage of Use Cases and Persona Needs

I made designs for all of the use-cases (and then some) that I defined earlier. I ensured that with these designs, they followed not only the use-cases but also executed them in the same way the original app did. I did not want to present users the same app, but with completely different functionalities. I am fairly confident that I have covered all of the use-cases. I should note that I made designs that don't necessarily involve the

use-cases but make up the rest of the app's structure. For example, I created designs for adding your NHI number, even though I never created a use case for such a scenario. My app can be described as a 'clone of the official COVID Tracer App, due to the fact that not only do the designs mirror that of the app, but the functionalities of the app do so too.

There is one difference between my app and the original app, and that is in regards with how registering a new account for the COVID Tracer App works. There were two ways of doing this in the original app; one was like the one shown above, and another involved entering your name and phone number again, gender, ethnicity and date of birth. As a result, this would cause potential confusion among newer users of the app, because they have to register twice. So for this app, I decided to streamline the process by entering the details mentioned earlier as part of the account registration process, so users don't have to worry about it later on. Despite the fact that both my personas are proficient with technology (one more so than the other), I put in the effort to simplify processes where I could, as of course, this app will be used by the wider New Zealand community under the advice of the government.

Colour Palette and Fonts

181817

FECF00

FAF0CF

F1F1F1

coolors

FEFFFE

When it came to selecting a colour scheme for the app, it was clear from the get go that the colour scheme used by the original app should be retained, especially considering that the wider New Zealand community had become accustomed to seeing the colour scheme that make up the New Zealand's Government COVID-19 Response campaign. Changing it to an entirely new colour scheme would confuse many users and therefore make no sense to do so.

In terms of the font selected, I used Helvetica Neue. The original app uses Baloo as the main font used in every page of the app. Unfortunately, I designed my app in Adobe XD which does not have Baloo as a choice of font, so I selected Helvetica Neue as the best alternative as it is modern and contemporary.

Design Discussion
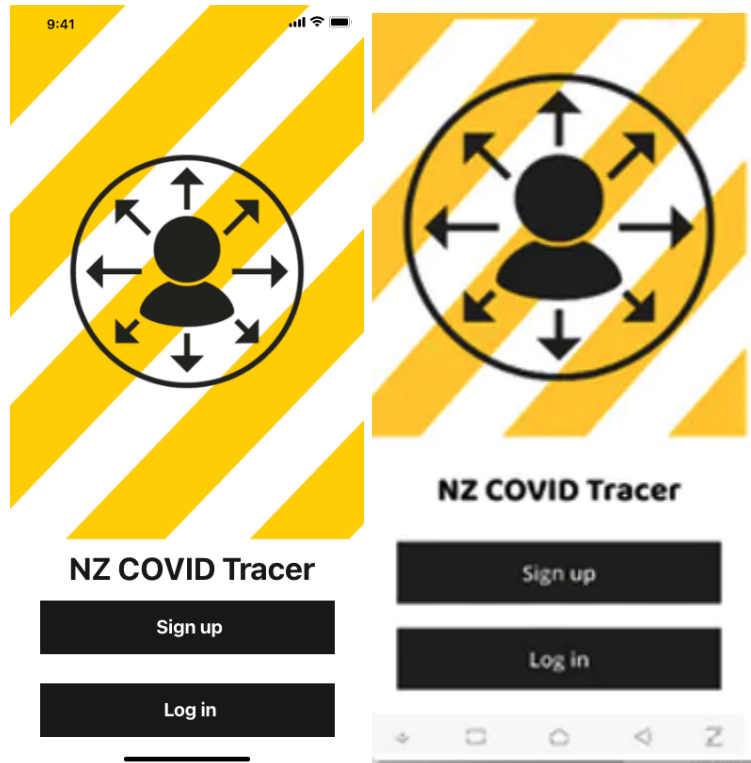
This is my improved NZ Covid Tracer homepage. The layout mirrors much of the original as I found no particular issue with how the original app's home page looked. In fact, I embrace it. The most convenient location for buttons for the majority of users is near the bottom of the screen. And this is because most people will be using their thumb fingers, which doesn't reach very high up near the top of the screen. So I retained the layout from the original for this specific reason.

When creating the home page, I had the opportunity to replace the predominantly white background (where the buttons are) with the colour yellow. And my initial design choice was to use the same shade of yellow seen in the original app as the background. However, I soon came across a problem. Although the shade of yellow selected by the MOH is fine, I realized that after a long period of using the app, it does cause eye strain on the user. And it is easy to see why; yellow is a particularly bright

colour, regardless of what shade. This would make using the app a literal eyesore for most users, especially those whose eyes are sensitive to light. So I reverted to the predominantly white background.

Step 1 of 3

Create your account

Email address *Required*

Password *Required*

Re-enter password *Required*

Passwords must:
- be at least 10 characters long
- contain at least one uppercase letter
- contain at least one lowercase letter
- contain at least one number
- not be one you use somewhere else

Next step

Already have an account? Log in

Step 2 of 3

Confirm your email is correct

Please enter the verification code sent to:
tanjiro.kamado@gmail.com

Haven't received your code?
Check your spam folder.

Resend code

Next step

Step 3 of 3

Tell us more about you

This information helps contact tracers reach you faster when we need to. If you have multiple names, enter the one most people would use.

First name *Recommended*

Last name *Recommended*

Phone number *Recommended*

Mobile numbers are preferred

Date of birth *Recommended*

DD/MM/YYYY

What gender do you identify as? *Optional*

○ Male
○ Female
○ Gender diverse
○ Prefer not to say

Why ask for my gender?

What ethnic group do you belong to? *Optional*

○ New Zealand European
○ Māori
○ Samoan
○ Cook Island Māori
○ Tongan
○ Niuean
○ Chinese
○ Indian

Date of birth

Japanese, Korean , Filipino

Why ask for my ethnicity?

○ I have read and accept the privacy policy.

Finish

Sign up complete

Account created

Thanks for signing up to protect yourself, your whanau and your community.

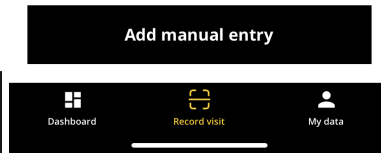Together we can slow the spread of COVID-19.

Get started

Like the homepage, registering a new account for the COVID Tracer App mirrors that of the original in terms of layout. With one key difference.
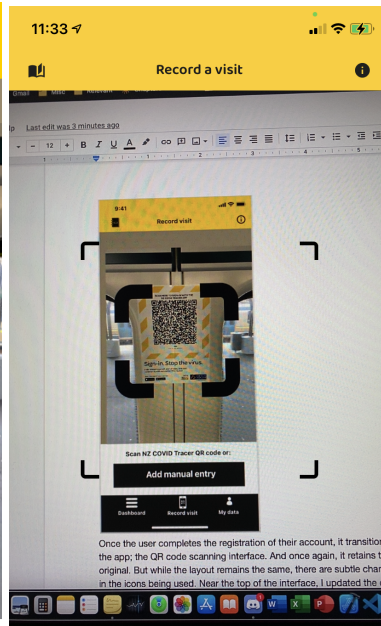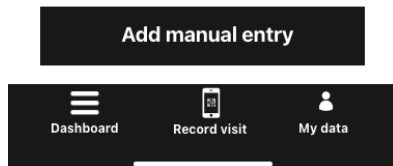
Once the user completes the registration of their account, it transitions to the 'meat' of the app; the QR code scanning interface. And once again, it retains the layout of the original. But while the layout remains the same, there are subtle changes, most notably in the icons being used. Near the top of the interface, I updated the diary icon to look more like a genuine diary, and the information icon (represented by 'i') is hollow inside the circle to allow the 'i' to stand out more. And at the bottom of the interface, the original icon for the 'Dashboard' consisted of an offset grid of squares, which to me was misleading because in reality, the dashboard was more like a list than anything else. So to rectify the problem, I added a new icon which consisted of three horizontal bars, making up a list-like appearance. And while I had no particular issue with the other two icons, I decided to change them anyway to improve the overall appearance.

And last but not least, the big QR icon that appears when the camera is on. My issue with the original was that it was too thin, and therefore it would often 'disappear' in the surroundings captured by the camera. So I improved it by thickening the lines, making them stand out more and therefore making the pointing of the phone camera at the QR codes easier.
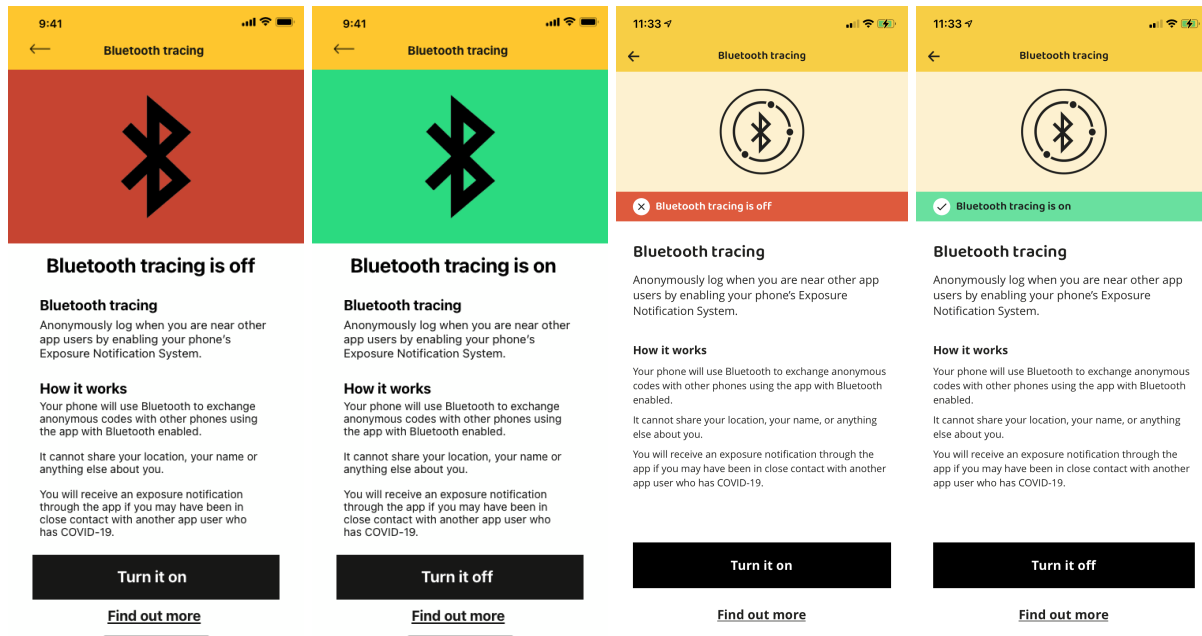
The images above provide a side-by-side comparison between my app's Bluetooth tracing pages and the original app's said pages. The key difference is how it represents whether or not the feature is turned on. Starting with the original, while distinguishing between on and off is not a problem, it is how it is executed that I had slight concern about. When turning on or off the Bluetooth tracing feature, the text 'Bluetooth tracing is on/off' alternates between black and white based on the background. The text is white when it is red (when Bluetooth tracing is off), and black when it is green (when Bluetooth tracing is on). The lack of consistency in this regard bothered me and slightly let down what was otherwise a well thought out page. So to rectify the problem, I made my app's Bluetooth tracing page such that the background where the Bluetooth logo sits changes, depending on whether or not the feature is on. By doing so, the page retains much of the layout when enabling or disabling the Bluetooth tracing feature, and therefore improving the consistency between the two layouts. Obviously, some things have to change between the two pages, but I have done my best to ensure that the changes are relatively minor and therefore retain the layout as much as possible.

Reflection

Pros

1. The app retains much of the original app's design and functionalities, and therefore can be described as a COVID Tracer App 'clone'. Because the app's target audience is the wider New Zealand community, it was important that I kept the app as similar to the original as possible. By doing so, it will allow users to jump from the original app into the current app without too facing too steep a learning curve. Knowing that users will vary in terms of tech proficiency was a key motivation in retaining the original design and functionalities in my app.

2. The registration process has been streamlined. As mentioned earlier, in the original app, the user had to create an account by creating a new username and password etc, and then later on (after the user had created an account) enter their date of birth, gender and ethnicity. Splitting the two processes in my opinion was unnecessary, and therefore I believed the processes could be combined together to streamline the entire registration process. This caters not only to my personas, but to other users in the wider New Zealand community that I have not considered. And that is one aspect that I would like to highlight.

3. In my opinion, using Helvetica Neue as the font 'cleaned' up the design of the app a little bit more. I had no particular issue with the original app's choice of fonts, but looking at them both side-by-side, my app, while it looks similar, looks cleaner due to the choice of fonts.

4. By enlarging the text size in pretty much every page of the app, readability will not be as big a problem as it would be with the original app. It will not affect my personas directly, but may be very helpful to any user who may struggle with reading small text.

5. My app's greatest strength in terms of its design is consistency. Yes, I did change all of the icons used in the app, but these icons will be universally recognized by every user who will use this app. And even if I didn't change the icons, because of the similarities between the original app and my app, users will remember much more quickly how to get to where they want to go with the app, i.e. from scanning QR codes to adding their NHI number.

6. In my humble opinion, a well-designed user interface does not require additional tutorials to guide users on how it works. What I have designed is reasonable. And I am fairly confident that even new users will get to know the app with only a minuscule learning curve.

Cons

1. My design is incomplete; I have covered most, but not all, areas of user needs. And as a result, I cannot guarantee that all of the pages make any sense to users. This contradicts my earlier statement but I know for a fact that there will be a minority of users who will be dazzled by the functionalities of the app. To rectify the problem, I would need further testing, user feedback and constant refinement of the app, which includes creating new pages.

What Have You Learnt About The Problem By Proposing A Solution?

When designing a user interface, there are two things that a designer must consider; the user, and the target audience. Between the original app and my app, I learned that 'consistency caters to customers'. In other words, a consistent (or familiar) looking app will cater to a wide variety of people, even if it means designing a clone of that app or website. That said, even if the apps were to differ from one another, one thing that is for sure is that simplicity is another important factor to consider when designing a user interface. A user will be put off by an app or website that is ridiculously complicated to use, but will welcome one that is very simple to use. And simplicity is another thing I learned when designing the user interfaces for the app.

Bibliography

- [NZ COVID Tracer App](#)
- [Bluetooth tracing | Ministry of Health NZ](#)
- [Getting started with NZ COVID Tracer | Ministry of Health NZ](#)
- [NZ COVID Tracer won't help with Aussie Travel Bubble](#)
- [[Photo] Tanjiro Kamado](#)
- [[Photo] Eren Jaeger](#)